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(54) A method for responding to mail returned to a sender as undeliverable

(57) A method for responding to a notice by the U.S. Postal Service, or a foreign postal service, that a mail piece is undeliverable. In this method, an amalgamated recipient data center (ARDC) executes a search pattern designed to efficiently determine whether the address used is valid (so that the mail piece was returned erroneously), or whether there is a new address, possibly not reported to the postal service. The search pattern used for a search is based on the endorsement indicated by the postal service explaining why the mail piece was returned. A search pattern for a returned mail piece has search objectives corresponding to the endorsement on the returned mail piece, and aims at achieving the search objectives by executing one or more search processes, each process involving one or more data sources or sources of data. The search processes of a search pattern can be executed in parallel or sequentially, but sequentially executing the search processes is often more efficient. The search is continued to completion unless a success factor reaches a predetermined confidence threshold.

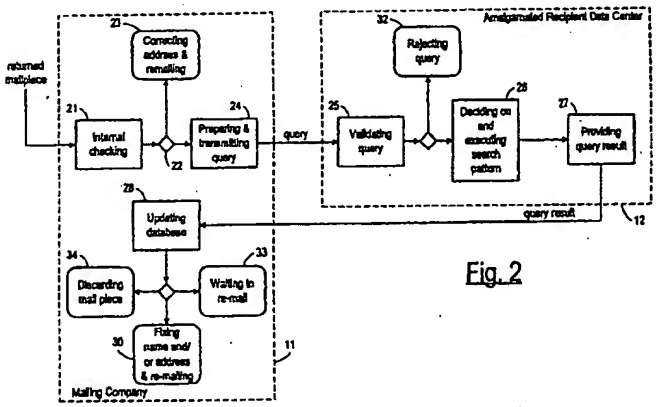

Fig. 2

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Description

[0001] The present invention relates generally to methods for automating mailing, and in particular, to a method for responding to receiving from the U.S. Postal Service mail returned as undeliverable.

[0002] Companies often use automated mailing systems for addressing mail to addressees. Although there are various means by which companies that operate such mailing systems for addressing mail can verify the addresses used, there are still a number of events that can lead to mail being returned to a mailing company and marked "Undeliverable as Addressed" (UAA). For example, an addressee may have moved and not yet completed a change-of-address form with the U.S. Postal Service. In that case, what likely would have happened is that the new resident of the address would have marked the mail "Not at this Address" and put it back in a mail box. However, since the Postal Service would have no better address, it would have marked the mail piece "Undeliverable as Addressed," endorsed the piece with "No Forwarding Address," and returned the mail piece to the sender, in this case, the mailing company. In this scenario, the piece of mail returned to the sender is marked "Undeliverable as Addressed," and is, in fact, undeliverable as addressed.

[0003] In other cases, however, a mail piece may be marked "Undeliverable as Addressed" when in fact the address is correct. Sometimes this happens because of a mistake on the part of a Postal Service employee. Other times, the addressee may have provided a change of address shortly after having moved, almost ninety days earlier, and then a mailing company, without pre-screening its mailing addresses before addressing its mail, uses an address for which the forwarding instructions expire before the mail can be delivered. In that case, the Postal Service will mark the mail, correctly, as "Undeliverable as Addressed," and then the company's internal address database should be updated with current address information from, for example, the U.S. Postal Service National Change of Address (NCOA) database.

[0004] Most problems with automated mail can be avoided by pre-screening mailing addresses. There are already several services a mailing company can use to pre-screen a mailing list. However, many times a company will choose not to use such a service; in many automated mailing applications, a mailing company can reasonably expect that almost all of its addresses will be correct, and it would be therefore wasteful to invest in pre-screening. In those situations, and even when there has been a pre-screening and there are some pieces of mail returned as "Undeliverable as Addressed," what is needed is a method for examining the returned mail to determine if, among other possibilities, the mail was in fact correctly addressed and has simply been returned in error.

[0005] Accordingly, the present invention is a system for responding to the receipt of a mail piece as undeliverable. An object of the present invention is to respond, efficiently and accurately, to receiving such a mail piece, including responding to mail *incorrectly* returned as undeliverable.

[0006] To meet this objective, the present invention provides a method of responding to a notice by a postal service that a mail piece addressed to an addressee is undeliverable, the notice including an endorsement indicating why the postal service was unable to deliver the mail piece, the method comprising the steps of: predetermining a set of data sources to be searched; predetermining a confidence threshold for establishing when to terminate a search of the data sources; based on the endorsement made by the postal service, selecting a search pattern consisting of at least one search process having a pre-determined search objective, each search process programmed to search at least one of the data sources; and executing the search pattern so as to vary a success factor from an initial value based upon the instantaneous results of the executed search pattern; wherein the executing of the search pattern is terminated if the success factor reaches the confidence threshold.

Fig. 1 is a block diagram indicating elements and data sources involved in executing the method of the present invention;
Fig. 2 is a flow chart showing, in one aspect of the present invention, the overall process corresponding to receiving mail marked undeliverable; and
Fig. 3 is a tabular representation showing how a postal endorsement for a returned mail piece corresponds to a particular search pattern made up of various search processes.

[0007] The method of the present invention uses a data center able to access various, independent sources of name and address information, accessible as separate databases or sources of data. Because this data center accesses an amalgam of name and address data, it is here called an amalgamated recipient data center (ARDC). In the present invention, as explained in more detail below, a mailing company that has received back from a postal service a mail piece indicated as undeliverable, will prepare a query that includes the address used and the endorsement noted by the mail carrier, and will then provide the query to the ARDC.

[0008] After preparing a query for a returned mail piece marked undeliverable to a particular addressee, the mailing company transmits the query to the ARDC using U.S. mail, telephone or facsimile, e-mail (by scanning the face of the return mail onto a computer record and adding to the computer record the identification of the requestor). The ARDC then executes various searches, making up a search pattern, to locate new address information for the addressee. The search pat-

tern is designed to efficiently determine whether the address used for the addresses is really correct (so that the mail should never have been marked undeliverable), or whether a new address should be used for the addressee.

[0009] The present invention has the worthwhile result that mail returned as undeliverable will not be set aside until the addressee asks about it. If a mailing company sends important or value-bearing mail to an individual, based on information in the mailing company's database, and that information is, in fact, correct but the mail is returned marked undeliverable, the mailing company is likely to simply wait to be contacted by the addressee, which will only happen if the addressee for some reason expects the mail piece. There will be no change of address forthcoming because, in this scenario, the individual has not moved; the mail piece has simply been erroneously returned marked undeliverable. With the present invention, instead of an employee at the mailing company having to unravel all the possible scenarios in which a mail piece would be returned marked undeliverable, probably using some *ad hoc* procedure, or simply waiting in the hope that the addressee will come looking for the mail, the determination of what to do is made promptly, using a predetermined process designed to provide a reliable result efficiently.

[0010] Referring now to Fig. 1, the method of the present invention is shown to involve a mailing company **11**, an amalgamated recipient data center (ARDC) **12**, and various, independent data sources **14**, each providing information useful in associating a name with an address when taken alone or when combined with information from others of the data sources. Also indicated in Fig. 1 is the ownership of each data source.

[0011] Still referring to Fig. 1, the data sources indicated are only intended to be illustrative of data sources that would be consulted in a particular implementation of the present invention. As new data sources useful for the object of the present invention become available, it is envisioned that these too would be consulted in executing the search patterns that will be described below.

[0012] Also, corresponding to the National Change of Address (NCOA) database and the Fast Forward database, which are owned and maintained by the U.S. Postal Service, there will often be similar databases in other countries operated by postal services of those countries. The present invention is intended to consult these corresponding postal service databases instead of, or in addition to, the U.S. Postal Service versions, depending on where the present invention is practiced, or whether the returned mail piece suggests consulting foreign sources of name and address information. Moreover, the present invention is not intended to be restricted to mail pieces returned by the U.S. Postal Service, but, instead, to be of use in responding to receipt of a mail piece returned by any postal service.

[0013] Still referring to Fig. 1, the suppression data of the data sources 14 is name and address information of people who have indicated that they would prefer not to receive one or another kind of mail. The term of art *Dead House* indicates a formerly used structure that has been abandoned or destroyed, or is for any reason no longer a place where mail should be sent.

[0014] Referring now to Fig. 2, a flow chart is used to represent steps in the method of the present invention performed by both the mailing company **11** and the ARDC **12**. Terminal steps in the method of the present invention are indicated within blocks having rounded corners.

[0015] In a first, internal checking step **21**, upon receiving a mail piece returned as undeliverable, the mailing company **11** first confirms that the mail piece was correctly marked according to whatever data the mailing company currently has in its own address database. The mail piece may have been mismarked by the mailing company, or, more likely, the mailing company may have corrected its mailing data based on information from one or another outside source after mailing the returned mail piece.

[0016] If the returned mail piece does bear the address in the mailing company's internal mailing data, then without access to other confirmatory information, the mailing company must presume that the mail piece was correctly marked undeliverable. Therefore, in the present invention, the mailing company defers to a service, practicing the present invention, to either confirm that the mail piece address is correct as originally mailed, or to determine a new address, or whether there is any address at all for the addressee.

[0017] Decision step **22** indicates that if the mail piece address conforms to what is in the mailing company's address database, then the mailing company cannot perform a correcting address and re-mailing step **33**, but instead must perform a preparing and transmitting query step **24**, in which the mailing company packages the information for a query on the address of the addressee, and transmits the query to the ARDC **12**. The information included in the query is any information provided on the face of the returned mail piece, including whatever endorsement the mail carrier indicated. Examples of an endorsement are "No Mail Receptacle," and "Temporarily Away." (See **41** of Fig. 3.) The query information further includes identification of the mailing company.

[0018] In a next, validating query step **25**, the ARDC **12** examines the query transmitted by the mailing company **11** to determine whether the query contains adequate information for a response, including whether the query indicates it is from a mailing company with which the ARDC has an understanding in respect of the confidentiality of data provided by the ARDC. If the query is incomplete, or otherwise invalid, in a rejecting query step **32**, the ARDC terminates processing of the query. If, however, the query is found to be valid, then in a next, executing search pattern step **26**, the ARDC performs a predetermined search of a

series of address databases, leading to a most likely determination of whether the mail piece was correctly marked undeliverable, and if so, what is most likely a corrected address. Then in a next, providing query result step **27**, the ARDC returns the query result to the mailing company indicating whether the mail piece was correctly marked undeliverable, and, if so, a new address to use if any new address is in the address databases searched.

[0019] In a next, updating database per result step **28**, the mailing company **11** examines the query result provided by the ARDC **12** and if that result shows a new, current address, the mailing company updates its database. Depending on the result of the query then, in a next, fixing name and address and re-mailing step **30**, the mailing company may readdress and re-mail the mail piece based on the result of the query, or in a waiting to re-mail step **33** may hold the mail and later re-mail it in the case of an addressee only temporarily without a good address or, in a discarding mail piece step **34** may simply discard the mail piece, as for example in the case of a deceased addressee with no person designated to receive mail on behalf of the deceased.

[0020] It is important to realize that the mailing company would likely not itself have data sources available to fix both the name and address of a mail piece. Thus, the correcting address and re-mailing step **23**, performed without consulting the ARDC, does not include fixing the name of the addressee. In contrast, the corresponding step **30**, performed after consulting the ARDC, allows for fixing the name as well as the address.

[0021] Referring now to Fig. 3, the different search patterns according to the present invention are shown in a pattern table **41**, as well as how those search patterns for a particular returned mail piece depend on the endorsement indicated on the returned mail piece. Also shown in a process table **42** are the particular search process modules indicated by the search patterns of the pattern table **41**.

[0022] Thus, for example, if the returned mail piece is endorsed "attempted-not known," the ARDC will pursue the process action plan: verify name at address; i.e., it will seek to verify that the named addressee is at the address as mailed. To this end, it will execute the search pattern indicated as *BACDH*, which will require executing the following search processes: *B* (attempt to locate the addressee at some new address); *A* (check and correct the address used); *C* (verify and determine whether the addressee has moved); *D* (verify and determine whether the recipient is deceased); and *H* (check for the addressee as a child or relative of the addressee).

[0023] Each search process involves searching one or more of the data sources accessible by the ARDC, depending on the search process. For example, the search process *A* (check and correct the address used) will, in the preferred embodiment, refer to the U.S. Postal Service NCOA and Fast Forward databases. More generally, the search process *A* will refer to any accessible data source useful in checking and correcting an address, i.e., useful in accomplishing its implied goal, and likewise for the other search processes of process table **42**.

[0024] In executing a search pattern, the ARDC may not necessarily perform the search processes in the order suggested by the search pattern. The search processes may be performed in parallel, or in any order. In the preferred embodiment, however, the order suggested by the search pattern is believed to be the most efficient order, in the sense that it is the order usually most likely to provide sufficient confidence to terminate a search pattern after the least searching, as explained below.

[0025] While executing a search pattern, the ARDC accumulates a success factor used to decide whether to terminate searching. As a search continues, as information is found in the various databases, the success factor for the search is varied from some initial value. If, during the search, the success factor reaches some pre-determined confidence threshold, the search is terminated before the search pattern is completed. Depending on what is uncovered in executing the search pattern, the success factor may be either increased or decreased, or not changed at all. Information uncovered in one data source may contradict information in a second data source, or may contradict a conclusion that might be drawn from data in the second data source. In that case, the success factor would be decreased, even if the instantaneous value dips below the initial, starting value.

[0026] In the preferred embodiment, one predetermined confidence threshold is used for all searches. In other embodiments, though, the confidence threshold will be adjusted upward or downward, before the search begins, depending on whether the search should be more or less certain than usual. Performing the search processes in the order indicated by the search patterns in the pattern table **41** is believed to be most efficient in the sense that it is believed that the success factor for a search would most likely reach the confidence threshold fastest by performing the search processes in the order indicated by the search pattern, e.g. for a pattern *ADB*, performing first search process *A*, then *D*, then *B*.

[0027] Whatever rules are used to increase a success factor during a search, in the preferred embodiment, the success factor cannot be allowed to exceed the pre-determined confidence threshold until at least two independent data sources corroborate how to respond to the returned mail piece based on the name as addressed on the returned mail piece. For example, if a mail piece is returned addressed to F. Smith at some address, endorsed as "attempted--not known," the ARDC will not terminate the search pattern until it located two independent data sources that agreed in concluding, for example, that the intended F. Smith is

now at some particular new address.

[0028] If the success factor does not reach the confidence threshold, the search is continued, according to the search pattern, until it is completed, and the results of the search -- the most likely name and address -- are provided to the mailing company, along with the final value of the success factor.

[0029] Although a preferred embodiment of the invention has been specifically described, it will be understood that the invention is to be limited only by the appended claims, since variations and modifications of the preferred embodiment will become apparent to a person skilled in the art. Therefore, it is contemplated that the appended claims will cover any such modification or embodiments that fall within the true scope of the invention.

Claims

1. A method of responding to a notice by a postal service that a mail piece addressed to an addressee is undeliverable, the notice including an endorsement indicating why the postal service was unable to deliver the mail piece, the method comprising the steps of:

   a) pre-determining a set of data sources to be searched;
   b) pre-determining a confidence threshold for establishing when to terminate a search of the data sources;
   c) based on the endorsement made by the postal service, selecting a search pattern consisting of at least one search process having a pre-determined search objective, each search process programmed to search at least one of the data sources; and
   d) executing the search pattern so as to vary a success factor from an initial value based upon the instantaneous results of the executed search pattern;

   wherein the executing of the search pattern is terminated if the success factor reaches the confidence threshold.

2. The method as claimed in claim 1, wherein the search processes of a search pattern are executed according to a predetermined order indicated by the search pattern.

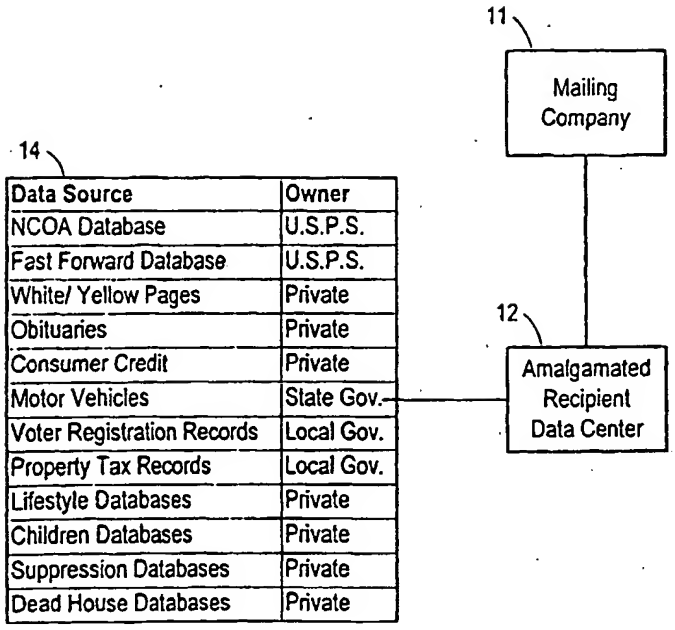
3. The method as claimed in claim 1, wherein at least some of the search processes of a search pattern are executed in parallel.

4. The method as claimed in claim 1, wherein the search processes include:

   A) check and correct the address used;
   B) locate addressee;
   C) verify and find if addressee moved to new location;
   D) verify addressee deceased status;
   E) verify a recent postal process change;
   F) find current recipient phone, fax, or World Wide Web address;
   G) check for a possible "Dead House";
   H) check for addressee as child or relative status; and
   I) select another carrier that can deliver to address.

5. The method as claimed in claim 4, wherein the search patterns depend on the endorsement on the returned mail piece as follows:

   for Attempted-Not Known, execute BACDH;
   for Box Closed-No Order, execute ABCE;
   for Deceased, execute DAB;
   for In Dispute, execute ABI;
   for Insufficient Address, execute CAB;
   for Moved, Left No Address, execute CBA;
   for No Mail Receptacle, execute BAEI;
   for No Such Number, execute BAE;
   for No Such Office in State, execute BAEI;
   for No Such Street, execute BAEI;
   for Unable to Forward, execute ABAI;
   for Outside Delivery Limits, execute BAEI;
   for Refused, execute BAHD;
   for Returned for Better Address, execute ABCDEA;
   for Temporarily Away, execute BFI;
   for Unclaimed, execute BHCFI; and
   for Vacant, execute GBAG.



Data Source	Owner
NCOA Database	U.S.P.S.
Fast Forward Database	U.S.P.S.
White/ Yellow Pages	Private
Obituaries	Private
Consumer Credit	Private
Motor Vehicles	State Gov.
Voter Registration Records	Local Gov.
Property Tax Records	Local Gov.
Lifestyle Databases	Private
Children Databases	Private
Suppression Databases	Private
Dead House Databases	Private

Fig. 1

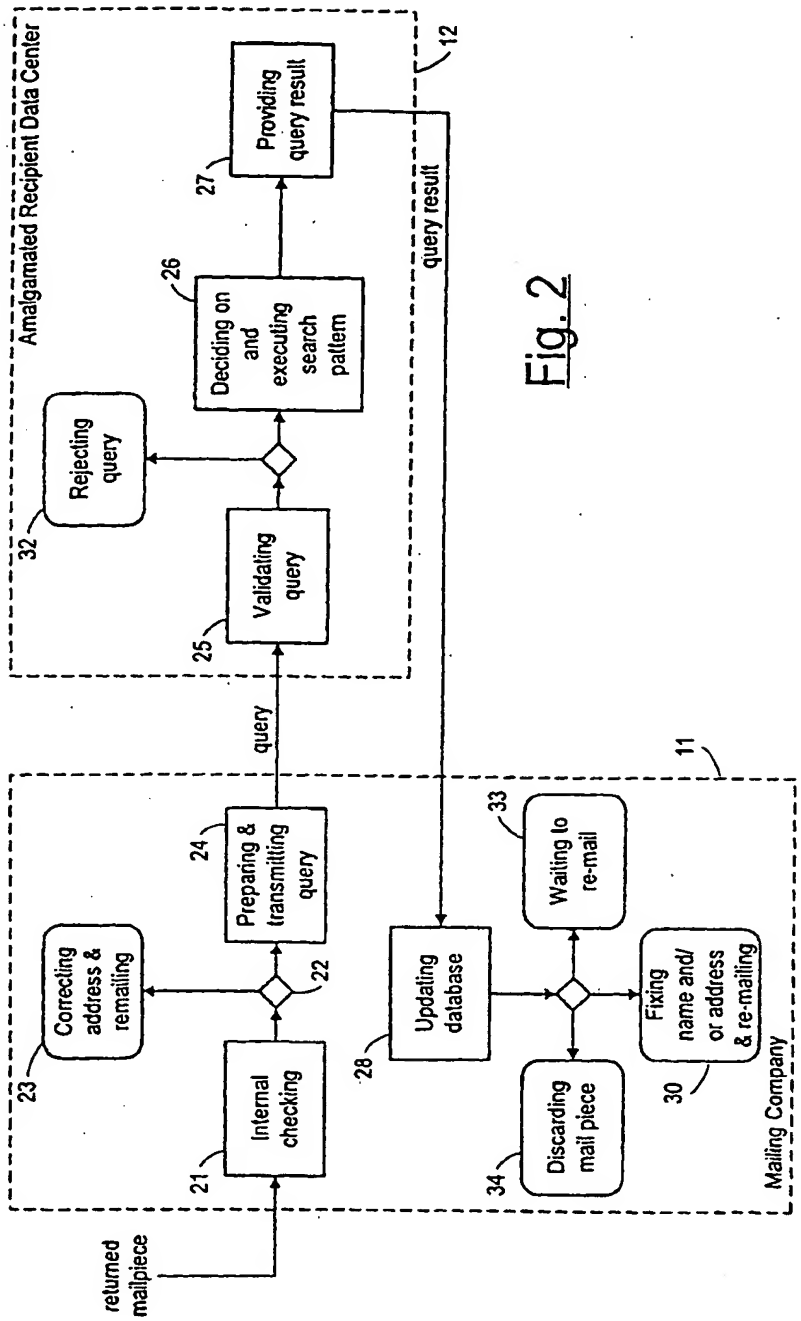

Amalgamated Recipient Data Center
12
Providing query result
27
Deciding on and executing search pattern
26
Rejecting query
32
Validating query
25
query result
query
11
Preparing & transmitting query
24
Correcting address & remailing
23
22
Internal checking
21
returned mailpiece
Updating database
28
Waiting to re-mail
33
Fixing name and/ or address & re-mailing
30
Discarding mail piece
34
Mailing Company

Fig. 2

Postal Endorsement Given	Process Action Plan	Pattern
Attempted-Not Known	Verify name at address	BACDH
Box Closed-No Order	Verify person moved	ABCE
Deceased	Verify status	DAB
Illegible	NA	—
In Dispute	Verify address	ABI
Insufficient Address	Verify address	CAB
Moved, Left No Address	Find new address	CBA
No Mail Receptacle	Verify, use private carrier	BAEI
No Such Number	Verify address for name	BAE
No Such Office in State	Verify change	BAEI
No Such Street	Verify	BAEI
Not Deliverable as Addressed	—	—
-Unable to Forward	Find a new address	ABAI
-Outside Delivery Limits	Find new route	BAEI
Refused	Verify person exists	BAHD
Returned for Better Address	Verify faulty address	ABCDEA
Returned for Postage	NA	—
Temporarily Away	Locate, Contact verify	BFI
Unclaimed	Locate contact verify	BHCFI
Vacant	Verify, Locate, Phone verify	GBAG

41

Search Processes (Modules)	
A	Check and Correct the Address Used
B	Locate Addressee
C	Verify and Find if Addressee Moved To New Location
D	Verify Addressee Deceased Status
E	Verify A Recent Postal Process Change
F	Find Current Recipient Phone, Fax, or W.W.W. address
G	Check For a Possible "Dead House"
H	Check For Addressee As Child Or Relative Status
I	Select Another Carrier That Can Deliver To Address

42

Fig. 3